REMARKS

Applicants are amending their claims in order to further define various aspects of the present invention. Specifically, Applicants are amending claim 1 to incorporate therein the subject matter of each of claims 3 and 5; and, correspondingly, have cancelled claims 3 and 5 without prejudice or disclaimer. In addition, Applicants have amended claim 14 to be dependent on claim 1.

Initially, reconsideration and withdrawal of the Finality of the Office Action mailed November 24, 2008, is respectfully requested. In this regard, note that in the Office Action mailed November 24, 2008, which was made a Final Office Action, the Examiner applied all new references, as compared with references applied in the Office Action mailed March 11, 2008. Note that in the Amendment filed August 11, 2008, in response to the Office Action mailed March 11, 2008, Applicants merely incorporated subject matter of previously considered claim 13 into claim 1, and also recited that "an" insulating film, rather than a fired or sintered insulating film, was provided on the electroconductive ultrafine powder. Such recitation of "fired or sintered" insulating film was removed from claim 1 in light of the rejection of claim 1 under the first paragraph of 35 USC 112, in the Office Action mailed March 11, 2008, and such amendment of claim 1 should have been expected by the Examiner. In this regard, note Manual of Patent Examining Procedure (MPEP) 706.07(a), indicating that a second or any subsequent action on the merits in any application should not be made final if it includes a rejection, on prior art not of record, of any claim amended to include limitations which should reasonably have been expected to be claimed.

As the Examiner has rejected claim 1 in the Office Action mailed November 24, 2008, which in substance is previously considered claim 13, over new

references, it is respectfully submitted that the Office action mailed November 24, 2008, cannot properly be made a Final rejection.

The contention by the Examiner on page 7 of the Office Action mailed November 24, 2008, that Applicants' amendments in the Amendment filed August 11, 2008, necessitated the new grounds of rejection in the Office Action mailed November 24, 2008, is respectfully traversed. As has been shown previously, in substance the amendments to claim 1, claiming the subject matter of previously considered claim 13, while expectedly avoiding the rejection under the first paragraph of 35 USC 112, did not necessitate the new grounds of rejection. To the contrary, it is respectfully submitted that the Examiner has applied new references such that the Office Action mailed November 24, 2008, cannot properly be made a Final rejection.

In any event, Applicants respectfully request entry of the present amendments, even if the Finality of the Office Action mailed November 24, 2008 is maintained. In this regard, noting that the present amendments incorporate subject matter of claims 3 and 5 into claim 1, it is respectfully submitted that the present amendments do not raise any new issues, including any issue of new matter. Furthermore, noting that the subject matter of previously considered claim 3 was not rejected over the teachings of Nohr, et al., it is respectfully submitted that the present amendments materially limit issues remaining in connection with the above-identified application; and, at the very least, present the claims in better form for appeal. Noting that the Examiner has applied new references, with new arguments, in the Office Action mailed November 24, 2008, it is respectfully submitted that the present amendments are clearly timely.

In view of the foregoing, it is respectfully submitted that Applicants have made the necessary showing under 37 CFR 1.116(b)(3); and that, accordingly, entry of the present amendments is clearly proper.

The objection to claims 14 and 15 as dependent on cancelled claim 13, set forth on page 2 of the Office Action mailed November 24, 2008, is noted. This objection is moot in light of amendment of claim 14, to be dependent on claim 1. In this regard, it is noted by the undersigned that the Examiner has construed claims 14 and 15 as depending on claim 1, in the examination set forth in the Office Action mailed November 24, 2008; by the present amendment of claim 14, claim 14 has been amended consistent with this construction by the Examiner.

Applicants respectfully submit that all of the claims presented for consideration by the Examiner patentably distinguish over the teachings of the references applied by the Examiner in rejecting claims in the Office Action mailed November 24, 2008, that is, the teachings of the U.S. patent documents to Yashiro, et al., Patent No. 6,521,677, to Yadav, et al., Patent Application Publication No. 2003/0207978, and to Nohr, et al., Patent Application Publication No. 2002/0149656, under the provisions of 35 USC 102 and 35 USC 103.

It is respectfully submitted that the teachings of these references as applied by the Examiner would have neither disclosed nor would have suggested such an insulated ultrafine powder as in the present claims, having the electroconductive ultrafine powder which is acicular with a minor axis as in the present claims, and an insulating film on the electroconductive ultrafine powder, with the electroconductive ultrafine powder and insulating film being made of materials as in claim 1, including wherein the insulating film comprises at least one species selected from the group consisting of an oxide having insulating properties and a nitride having insulating

properties, and wherein the insulating film has a thickness which is 0.3 nm or larger and not larger than the minor axis of the acicular form of the electroconductive ultrafine powder. See claim 1.

It is emphasized that according to the present invention, an insulated ultrafine powder is being claimed. Noting particularly the particulate described in the applied references and uses thereof, it is respectfully submitted that the teachings of the applied references do not disclose, nor would have suggested, the thickness of the insulating film as in the present claims. Contrary to the conclusion by the Examiner, it is respectfully submitted that the insulating film thickness is not a variable that is optimized by routine experimentation; but, rather, the insulating film thickness as in the present claims provides unexpectedly better results, as can be seen by the evidence in Applicants' specification, discussed in the following. This evidence must be considered in determining patentability of the presently claimed subject matter. See In re DeBlauwe, 222 USPQ 191 (CAFC 1984).

That is, attention is respectfully directed to Examples 1 and 2, on pages 11-13 of Applicants' specification; and Comparative Examples 4-6 on pages 16 and 17 of Applicants' specification. Note, also, the results shown in Table 1 on page 18 of Applicants' specification, for Examples 1, 2 and Comparative Examples 4-6. Thus, note that Examples 1 and 2 include an insulating film with thickness as in the present claims, having a relative dielectric constant that is relatively high as compared to that of particles formed in Comparative Example 6, having a relatively large insulating film thickness. Note that Comparative Examples 4 and 5, having an insulating film thickness smaller than that of the present claims, were conductive and cannot be utilized as a dielectric.

Note also the last eight lines on page 19 of Applicants' specification, describing the poor results occurring in Comparative Examples 4-6, with thicknesses of the insulating film outside the scope of the present claims.

It is respectfully submitted that this evidence in Applicants' specification, which must be considered in determining the issue of obviousness under 35 USC 103, shows that the thickness range of the insulating film is not a variable optimized by routine experimentation; but, rather, that the thickness range of the present claims, for the insulating film, provides unexpectedly better results. For this reason alone, it is respectfully submitted that the obviousness rejection of subject matter of previously considered claim 5, now in present claim 1, has been overcome.

Note that Examples 1, 2 and Comparative Examples 4-6 utilize tin oxide as the electroconductive ultrafine powder, with Examples 1, 2 and Comparative Examples 4 and 6 utilizing acicular tin oxide, doped with antimony; and these Examples and Comparative Examples utilize titanium dioxide as the insulating film. In connection therewith, note, for example, claim 12.

Furthermore, it is respectfully submitted that the teachings of the applied references would have neither disclosed nor would have suggested such insulated ultrafine powder as in the present claims, having features as discussed previously in connection with claim 1, and, additionally, wherein the insulating film has a relative dielectric constant of at least 20 (see claims 2 and 17); and/or wherein the ultrafine powder is made of stannic oxide doped with antimony (see claim 12); and/or wherein the acicular powder has an aspect ratio of 2-100 (see claim 14), more specifically an aspect ratio of 10-40 (see claim 15); and/or wherein the insulating film is formed of a metal oxide (see claims 17 and 18), with a dielectric constant thereof being at least 100 (see claim 18).

The present invention is directed to insulated ultrafine powder, well suited to the formation of an IC package, a module substrate, and an electronic part integrated with a high dielectric constant layer, particularly well suited to formation of an inner layer capacitor layer of a multi-layer system wiring substrate and also useful for miniaturizing built-in antennas and electro-magnetic absorption sheets, units and panels which prevent electronic wave interference.

There has been proposed, as a high dielectric constant layer on a wiring substrate for removing high frequency noise, a resin composite material incorporated with at least 65 vol% of a ferroelectric material such as barium titanate as a high dielectric constant filler, preferably forming a continuous layer of the high dielectric constant filler inside the composite material. This proposed composite has a relatively large amount of ferroelectric material, the reason for the necessity of such a large amount being set forth in the first paragraph on page 3 of Applicants' specification. However, with a composite containing such a large amount of ferroelectric material filler, processability and moldability are impaired.

Against this background, and as a result of extensive research and investigation made by the present inventors on formation of a continuous layer of a filler in a resin material, the present inventors have found that objectives of the present invention are achieved through use of an insulated ultrafine powder as in the present claims, having an insulating film on the electroconductive ultrafine powder, this insulating film having a thickness as set forth in the present claims, the electroconductive ultrafine powder having a shape and dimension as in the present claims, and wherein, e.g., such powder is made of a material selected from the group consisting of stannic oxide doped with antimony, indium trioxide doped with tin, zinc oxide doped with aluminum or gallium, and barium plumbate, and the

insulating film including at least one species selected from the group consisting of oxides and nitrides having insulating properties. Through use of materials for the electroconductive ultrafine powder as in the present claims, diffusion of metallic atoms from the ultrafine powder into media of an insulant, thereby lowering the insulating properties of the resin composite material formed using the ultrafine powder, can be avoided. Moreover, particularly desirable is stannic oxide doped with antimony, from the aspect of manufacturing cost. Note the sole full paragraph on page 5 of Applicants' specification.

Furthermore, by utilizing electroconductive ultrafine powder in the form as in the present claims, having a minor axis in a range of 5-70 nm, deteriorated electroconductivity due to quantum size effect can be avoided, while a failure in forming a continuous layer, where relatively small amounts of powder are included in the resin composite material, can be avoided. Note the paragraph bridging pages 5 and 6 of Applicants' specification.

In addition, through utilizing powder in an acicular form, less amount of powder need be added to the resin composite material in order to form a continuous layer. Note the paragraph bridging pages 5 and 6 of Applicants' specification.

Furthermore, through use of an insulating film having a thickness as in the present claims, a desired insulating effect is achieved, without having an adverse effect on the dielectric constant of the resin composite material formed utilizing such powder. See pages 6 and 7 of Applicants' specification.

It is emphasized that according to the present invention, an insulated ultrafine powder is provided, having an insulating film on the electroconductive ultrafine powder. As can be appreciated, the insulating nature of the powder is achieved through use of the insulating film. In this regard, compare Example 1 with

Comparative Example 1, described respectively on pages 11-13, and on page 15, of Applicants' specification, the results of this respective Example and Comparative Example being shown in Table 1 on page 18 of Applicants' specification.

Note that the Examiner has not rejected previously considered claim 5 under 35 USC 102 over the teachings of Yadav, et al., rejecting claim 5 in Item 2 on page 5 of this Office Action mailed November 24, 2008, over the teachings of Yadav, et al. Noting that the subject matter of claim 5 has been incorporated into claim 1, it is respectfully submitted that the anticipation rejection over the teachings of Yadav, et al., set forth in Item 1 on pages 3-5 of the Office Action mailed November 24, 2008, is moot.

In any event, Yadav, et al. discloses a nanostructured filler, intermittently mixed with a matrix to form a nanostructured composite, with at least one of the nanostructured filler and the nanostructured composite having a desired material property which differs by at least 20% from the same material property for a micron-scale filler or a micron-scale composite, respectively. Note Section [0003] on page 1 of this patent publication. See also Section [0007] on page 1, disclosing materials of the nanofilters; and see also Section [0015] on page 2, describing "desired material properties". This patent document goes on to describe, in Section [0031], that the nanofillers can be inorganic, organic or metallic, and may be in the form of powders, whiskers, fibers, plates or films. Note also Section [0054] on page 6 of Yadav, et al., describing that the nanostructured fillers, in coated and uncoated form, and nanofilled composites are expected to have significant value in biomedical applications for both humans and animals. See also Example 4 on page 8 of this patent publication, describing preparation of polymer-coated nanostructured filler.

As can be seen in the foregoing, as well as from a full review of Yadav, et al., this reference would have neither disclosed nor would have suggested the presently claimed invention, including, in addition to such features as the form of the electroconductive ultrafine powder (that is, acicular form), the material of the insulating film and thickness thereof, as well as unexpectedly better results achieved due to features of the present invention such as the thickness.

The undersigned again notes the contention by the Examiner on page 5 of the Office Action mailed November 24, 2008, that the insulating film thickness "is considered to be a variable that is optimizable by routine experimentation by a person of ordinary [skill] in the art". However, initially it is respectfully submitted that the applied reference does not disclose thickness of the insulating film being a variable to be optimized; accordingly, the basis for the contention by the Examiner that the thickness "is considered to be a variable that is optimizable by routine experimentation" has no basis in the record.

In addition, uses of the nanostructured filler in Yadav, et al., e.g., in biomedical applications, are noted. Based thereon, there is seen no basis for the conclusion by the Examiner that the insulating film thickness is a variable optimized by routine experimentation to a thickness as in the present claims, and advantages thereof as an insulated ultrafine powder.

It is respectfully submitted that the additional teachings of Yashiro, et al. would not have rectified the deficiencies of Yadav, et al., such that the presently claimed invention as a whole would have been obvious to one of ordinary skill in the art.

Yashiro, et al. discloses radiation-curable metal particles, comprising a radiation-curable group linked by a silyl group to a metal, in particular where the

metal is not inclusive of silicon metal. Note column 2, lines 23-27, of this patent. This patent describes that an object thereof is to provide a liquid curable resin composition which can produce transparent cured products with a high refractive index, high hardness, and superior abrasion resistance, and can be suitably used as a coating material. See column 2, lines 9-13. Note also column 3, lines 33-44. See also column 10, lines 44 and 45, describing that the average diameter of metal oxide particles is, for example, from 0.001-2 μm. See also column 10, lines 58-65. Note also column 14, lines 57-64, describing uses for the described radiation curable resin composition.

Even assuming, arguendo, that the teachings of Yashiro, et al. and of Yadav, et al. were properly combinable, such combined teachings would have neither disclosed nor would have suggested the presently claimed invention, including, inter alia, thickness of the insulating film, and/or material of the insulating film, and/or acicular form of the electroconductive particles, and advantages achieved thereby in, for example, relative dielectric constant of the formed particles.

Nohr, et al. has been applied in rejecting only claims 1, 2, 5 and 12, in Item 4 on pages 6 and 7 of the Office Action mailed November 24, 2008. As previously considered, claim 3 has not been rejected over the teachings of Nohr, et al.; and as the subject matter of claim 3 has been incorporated into claim 1, it is respectfully submitted that this rejection over the teachings of Nohr, et al. is moot.

In any event, Nohr, et al. discloses recording media, inks, and ink compositions, with stabilization of colorants against photodecomposition, as described in Sections [0012] and [0013] on pages 1 and 2 of this patent publication. Note also Sections [0025] and [0028] on page 3.

It is respectfully submitted that Nohr, et al., either by itself or together with the teachings of the other references applied by the Examiner, would have neither taught nor would have suggested such as insulated ultrafine powder as in the present claims, having an insulating film of specific materials as set forth in all of the present claims, with a thickness of such film, and advantages achieved due thereto, as discussed in the foregoing.

In view of the foregoing comments and amendments, reconsideration and withdrawal of the Finality of the Office Action mailed November 24, 2008, with corresponding entry of the present amendments, and reconsideration and allowance of all claims being considered on the merits in the above-identified application, are respectfully requested.

In any event, entry of the present amendments, and reconsideration and allowance of all claims pending in the above-identified application, are respectfully requested.

To the extent necessary, Applicants hereby petition for an extension of time under 37 CFR 1.136. Kindly charge any shortage of fees due in connection with the filing of this paper, including any extension of time fees, to the Deposit Account of Antonelli, Terry, Stout & Kraus, LLP, Account No. 01-2135 (case 396.43509X00), and please credit any overpayments to such Deposit Account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP

By **/William I. Solomon/**
William I. Solomon, Registration No. 28,565

WIS/ksh
1300 N. 17th Street, Suite 1800
Arlington, Virginia 22209
Tel: 703-312-6600
Fax: 703-312-6666